Module 22.5SD2
Tutorial 2 : Matlab programming and formats

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1 Problem 1

Write a short Matlab set of matlab functions that can:

- Image inversion: write a functions that reads in an image and then reverse the grey levels, so all pixels which previously had grey level i now have grey level $255 - i$.
- Image fft: write a function that reads in an image, computes the 2D Fourier transform and display on a single figure the image, the spectrum and the phase of the FFT.
- Filtering examples: Write a function that computes the fft of an image, removes its high frequencies, computes the inverse fft of the signal and displays the result. Comments? Do the same for low frequencies removal.

NOTE: Test images can be found in on Dr Y. Petillot web page (www.cee.hw.ac.uk/ ceeyrp) following the Teaching link.

2 Problem 2

Use xv (on Unix machines) to save images in different formats and investigate the suitability of the various coding techniques (for example TIFF can be saved with LZW encoding or Packbits which is a run length encoding technique).

3 Problem 3

Contrast run length and Huffman encoding techniques, discussing the implementation of each and their suitabilities for various types of images.

4 Problem 4

For what types of images are lossy compression techniques not suitable?